

Claims:

1. A pallet comprising a top pallet element and a bottom pallet element, wherein each pallet element comprises a platform and a plurality of pallet feet and wherein each pallet foot comprises an engaging portion, wherein:
5 in an inverted configuration, the engaging portions of the top pallet element are arranged to couple with corresponding engaging portions of the bottom pallet element;
in a stacked configuration, with the pallet elements in substantially the same orientation, at least one pallet element forms a nested configuration when stacked on top of the other pallet element; and
10 wherein the pallet elements are rotationally moulded from a plastics material filled with a mineral filler.
2. A pallet according to Claim 1 wherein the mineral filler comprises sand.
- 15 3. A pallet according to Claim 1 or 2 wherein the shape and/or configuration of the top pallet element is different to the shape and/or configuration of the bottom pallet element.
4. A pallet according to any preceding claim wherein, in a nested configuration, the feet of one pallet element are inserted into recesses in the top surfaces of the corresponding feet of the other pallet
20 element.
5. A pallet according to any preceding claim wherein the bottom pallet element forms a nested configuration when stacked on top of the top pallet element.
- 25 6. A pallet according to any preceding claim wherein the top pallet element forms a nested configuration when stacked on top of the bottom pallet element.
7. A pallet according to any preceding claim wherein the pallet elements form a nested configuration when one pallet element is stacked on top of the other pallet element but wherein a gap
30 is formed between the stacked pallet elements when the pallet elements are stacked in the reverse order.
8. A pallet according to Claim 7 wherein the gap formed between the stacked pallet elements is greater than around 20mm, preferably greater than around 40mm and preferably greater than around
5 50mm.

9. A pallet according to any preceding claim wherein the platform of the bottom pallet element comprises at least one aperture.

10. A pallet according to any preceding claim wherein the feet of the pallet elements are arranged to enable the blades of a forklift truck to engage the pallet from any one of four directions.

11. A pallet according to any preceding claim wherein the engaging portions comprise male or female engaging portions and wherein, in an inverted configuration, male engaging portions on one pallet element couple with corresponding female engaging portions on the other pallet element.

12. A pallet according to any preceding claim wherein the engaging portions of the top pallet element comprise male engaging portions.

13. A pallet according to any preceding claim wherein the engaging portions of the bottom pallet element comprise female engaging portions.

14. A pallet according to any preceding claim wherein at least a portion of each pallet element comprises an outer skin layer.

15. A pallet according to Claim 14 wherein at least a portion of each pallet element comprises an inner layer having a different composition to the outer skin layer.

16. A pallet according to Claim 15 wherein the inner layer comprises a foamed inner layer.

17. A pallet according to any preceding claim wherein the pallet element further comprises a remotely readable tag, preferably an RFID tag or a bar code.

18. A pallet according to any preceding claim wherein the platform of the top pallet element comprises a substantially continuous surface.

19. A pallet according to any preceding claim wherein the platform of at least one pallet element comprises a textured surface.

20. A pallet according to any preceding claim wherein the feet of the pallet elements are tapered.

21. A pallet according to any preceding claim wherein the top pallet element is joined to the bottom pallet element by frictional forces.

22. A pallet according to Claim 21 wherein the engaging portions of at least one pallet element comprise an uneven surface to increase the friction between the pallet elements.

5 23. A pallet according to any preceding claim wherein the engaging portions of the feet of the pallet elements are arranged so that, on rotation of the bottom pallet element about an axis through the plane of the platform of the bottom pallet element, a male configuration of engaging portions on the bottom pallet element mates with a female configuration of engaging portions on the top pallet element and vice versa.

10 24. A pallet according to any preceding claim wherein a male engaging portion of a foot comprises a protruding element and a corresponding female engaging portion of a foot comprises a hollow section, wherein the hollow section is sized to accommodate a protruding element.

15 25. A pallet according to any preceding claim wherein each pallet element is rotationally moulded substantially in one piece.

20 26. A pallet according to any preceding claim wherein the top and the bottom pallet elements couple to provide a double-sided pallet wherein the feet of both the first and the second pallet are arranged between the platforms of the pallet elements.

25 27. A pallet according to any preceding claim wherein the top and bottom pallet elements are arranged to couple on presenting opposed elements appropriately located without further fixings or adhesives.

28. A pallet according to any preceding claim wherein the height of a pallet element is at least around 100mm.

30 29. A pallet according to any preceding claim wherein the height of a double-sided pallet is substantially equal to the height of a standard pallet.

30. A pallet according to any preceding claim wherein the height of a double-sided pallet is less than around 200mm.

35 31. A pallet according to any preceding claim wherein at least one foot is arranged substantially at each corner of the platform.

32. A pallet according to any preceding claim wherein at least one foot is arranged substantially at the centre of the platform.

33. A pallet according to any preceding claim wherein at least one foot is arranged substantially at the centre of each edge of the platform.

34. A pallet according to any preceding claim wherein the feet of the pallet elements are arranged so that, on rotation of one pallet element about an axis through the plane of the platform of the pallet, a male configuration of feet on one pallet element mates with a female configuration of feet on the opposing pallet element.

35. A pallet according to any preceding claim wherein the pallet element is substantially rectangular.

36. A pallet according to any preceding claim wherein each pallet element is rotationally moulded substantially in one piece.

37. A pallet according to any preceding claim wherein the feet of each pallet element are formed integrally with the platform of the pallet element.

38. A pallet according to any preceding claim wherein the feet are tapered from a maximum width at the platform of the pallet element.

39. A pallet according to any preceding claim wherein recesses are provided in the upper surface of the platform of the pallet.

40. A pallet according to Claim 39 wherein the recesses in the upper surface correspond to the position of the feet of a pallet element.

41. A pallet according to any preceding claim wherein at least one foot is hollow.

42. A pallet according to any of Claims 39 to 41 wherein the recesses in the upper surface extend through the platform from the upper surface of the pallet element into the feet.

43. A pallet according to any preceding claim wherein, in a nested configuration, the feet of the top pallet element are inserted into recesses in the corresponding feet of the bottom pallet element.

44. A pallet according to any preceding claim wherein at least a portion of the pallet element comprises an outer skin layer.

45. A pallet according to Claim 44 wherein at least a portion of the pallet element comprises an inner layer having a different composition to the outer skin layer.

46. A pallet according to Claim 45 wherein the inner layer comprises a foaming agent.

47. A pallet according to any preceding claim wherein the pallet element further comprises a remotely readable tag, preferably an RFID tag.

48. A pallet according to any preceding claim wherein at least one foot comprises an aperture therethrough.

49. A pallet according to any preceding claim wherein the top surface of the platform of the top pallet element comprises a plurality of gullies.

50. A pallet according to any preceding claim wherein the bottom surface of the top pallet element comprises a plurality of gullies.

51. A pallet according to Claim 49 or 50 wherein the gullies comprise at least one insert along the length of the gullies.

52. A pallet according to any of Claims 49 to 51 as dependent on Claim 48 wherein the gullies are directed towards the feet of the pallet.

53. A pallet according to any preceding claim wherein at least one surface of the platform of at least one pallet element comprises anti-abrasive means for resisting abrasion of the platform surface.

54. A pallet according to Claim 52 wherein the anti-abrasive means comprises a plurality of ridges provided on the surface of the platform.

55. A pallet according to Claim 52 or 53 wherein the anti-abrasive means is provided on the bottom surface of the bottom pallet element, which lies between the pallet elements in an inverted configuration.

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56. A pallet element comprising a platform having an upper surface and a lower surface and a plurality of feet depending from the lower surface of the platform and wherein:

a single pallet element provides a single-sided pallet having feet of a height sufficient to allow lifting by a forklift truck;

5 a first said pallet element is arranged to couple to a second said pallet element to provide a double-sided pallet having a total height less than double the height of a single pallet element.

57. A pallet element according to Claim 56 wherein the pallet element is rotationally moulded substantially in one piece.

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58. A pallet element according to Claim 56 or 57 wherein the pallet element is manufactured from a plastics material filled with a mineral filler.

59. A method of assembling a double-sided pallet using two pallet elements, each pallet element comprising a platform and a plurality of feet depending from the platform, the method comprising:

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rotating the first pallet element about an axis in the plane of the pallet element;

arranging the second pallet element on top of the first pallet element so that the feet of the pallet elements lie between the platforms of the pallet elements and the feet of the pallet elements interlock;

coupling the second pallet element to the first pallet element.

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60. A method according to Claim 59 wherein step of coupling comprises applying pressure to the pallet elements.

61. A method according to Claim 60 wherein applying pressure comprises applying a force of less than around 1000N, preferably less than around 500N, or applying an impact from a hammer of less than around 10Ns.

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62. A method according to any of Claims 59 to 61 wherein coupling comprises coupling the pallet elements without adhesives or fixings.

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63. A method of manufacturing a plurality of pallets comprising:

inserting a feedstock comprising a filled plastics material into a mould;

rotating and heating the mould to rotationally mould a plurality of pallets;

releasing the plurality of pallets from the mould

35 separating the moulded plurality of pallets into single pallets.

64. A method according to Claim 63 further comprising inserting a second feedstock into the mould to form an inner layer within the pallet.

65. A method according to Claim 64 wherein the second feedstock includes a foaming agent to form a foamed inner layer.

66. A method according to any of Claims 63 to 65 wherein separating the moulded plurality of pallets comprises punching or cutting the pallets out of a sheet of moulded pallets.

67. A method of distributing pallets comprising arranging layers of pallets in a nested configuration in a container, shipping the container to a predetermined destination, removing the pallets from the container.

68. A method according to Claim 67 wherein the pallets comprise pallet according to the aspect described above or any of its preferred features.

69. A method according to Claim 67 or 68 wherein the pallets and the container are rotationally moulded.

70. A method according to any of Claims 67 to 69 wherein the layers of pallets are provided in sheets and the method further comprises cutting the sheets of pallets into individual pallets.

71. A rotationally-moulded load-carrying apparatus for carrying a load of at least 50 kilograms, wherein the apparatus is manufactured substantially from a filled plastics material comprising:
at least 10% by weight of a polymer;
at least 10% by weight of a mineral filler material.

72. Apparatus according to Claim 71 wherein the mineral filler material comprises a silicate material, preferably sand.

73. Apparatus according to Claim 71 wherein the mineral filler material comprises a carbonate material, preferably calcium carbonate.

74. Apparatus according to Claim 71, 72 or 73 wherein the polymer comprises polyethylene, preferably wherein the polymer comprises High Density Polyethylene (HDPE).

75. Apparatus according to any of Claims 71 to 74 wherein the material comprises at least 25% by weight filler.
76. Apparatus according to any of Claims 71 to 75 wherein the material comprises at least 25% by weight polymer.
77. Apparatus according to any of Claims 71 to 76 wherein the material comprises from about 30% to about 70% by weight polymer and from about 70% to about 30% by weight filler.
78. Apparatus according to any of Claims 71 to 77 wherein the filled plastics material further comprises a unifier.
79. Apparatus according to Claim 78 wherein the filled plastics material comprises at least about 0.1% by weight unifier.
80. Apparatus according to Claim 78 or 79 wherein the filled plastics material comprises less than about 10% by weight unifier.
81. Apparatus according to any of Claims 78 to 80 wherein the filled plastics material comprises at least about 0.25% by weight unifier.
82. Apparatus according to any of Claims 78 to 81 wherein the filled plastics material comprises less than about 5% by weight unifier.
83. Apparatus according to any of Claims 78 to 82 wherein the unifier is pre-mixed with the filler.
84. Apparatus according to any of Claims 78 to 83 wherein the unifier comprises an internal lubricant.
85. Apparatus according to Claim 84 wherein the internal lubricant comprises a fatty acid amide.
86. Apparatus according to Claim 85 wherein the internal lubricant comprises a straight or branched C₁₂-C₂₄ fatty acid amide.
87. Apparatus according to any of Claims 84 to 86 wherein the internal lubricant comprises steramide.

88. Apparatus according to any of Claims 84 to 87 wherein the unifier further comprises an external lubricant, preferably wherein the external lubricant comprises a stearate.

89. Apparatus according to any of Claims 84 to 88 wherein the unifier comprises less than 20% by weight internal lubricant.

90. Apparatus according to any of Claims 84 to 89 wherein the unifier comprises about 10% by weight internal lubricant.

91. Apparatus according to any of Claims 71 to 90 wherein the filler comprises at least one of:
a silicate material, preferably sand;
ash;
a carbonate material, preferably calcium carbonate;
a salt, preferably sodium chloride.

92. Apparatus according to any of Claims 71 to 91 wherein the apparatus is rotationally moulded substantially in one piece.

93. Apparatus according to any of Claims 71 to 92 wherein the filler comprises a light-coloured material.

94. Apparatus according to any of Claims 71 to 93 wherein the apparatus comprises a pallet., preferably wherein the pallet is moulded substantially in one piece.

95. Apparatus according to Claim 94 wherein the pallet comprises a platform and a plurality of feet depending from the platform.

96. Apparatus according to Claim 95 wherein the feet of the pallet are regularly spaced over the lower surface of the platform.

97. Apparatus according to Claim 95 or 96 wherein the feet are arranged to enable lifting equipment to engage the pallet from any one of four directions.

98. Apparatus according to any of Claims 95 to 97 wherein at least one foot is arranged substantially at each corner of the platform of the pallet.

99. Apparatus according to any of Claims 95 to 98 wherein at least one foot is arranged substantially at the centre of the platform of the pallet.

100. Apparatus according to any of Claims 95 to 99 wherein at least one foot is arranged substantially at the centre of each edge of the platform of the pallet.

101. Apparatus according to any of Claims 95 to 100 wherein the feet of the pallet are moulded integrally with the platform.

102. Apparatus according to any of Claims 95 to 101 wherein each foot has a recess in the lower surface of the foot.

103. Apparatus according to any of Claims 95 to 102 wherein the pallet comprises an outer skin layer having an upper surface and a lower surface.

104. Apparatus according to Claim 103 wherein the upper and lower surfaces of the outer skin layer are arranged to abut each other over at least a portion of the pallet surface.

105. Apparatus according to Claim 103 or 104 wherein the pallet further comprises an inner layer having a different composition to the outer skin layer.

106. Apparatus according to Claim 105 wherein the inner layer comprises a foaming agent.

107. Apparatus according to Claim 105 or 106 wherein the inner layer comprises at least 40% by weight of a filler.

108. Apparatus according to any of Claims 95 to 107 wherein the pallet has a length of at least 800mm.

109. Apparatus according to any of Claims 71 to 108 wherein the apparatus comprises a plurality of layers.

110. Apparatus according to Claim 109 wherein the composition of the filled plastics material differs between the layers.

111. Apparatus according to Claim 109 or 110 wherein the composition of a first layer of the apparatus is optimised to provide an outer skin layer.

112. Apparatus according to Claim 111 wherein the outer skin layer comprises more than about 50% by weight polymer.

5 113. Apparatus according to Claim 111 or 112 wherein the outer skin layer comprises about 60% by weight polymer.

114. Apparatus according to any of Claims 109 to 113 wherein the composition of a second layer of the apparatus is optimised to provide an inner layer.

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115. Apparatus according to Claim 114 wherein the inner layer comprises a polymer.

116. Apparatus according to Claim 114 or 115 wherein the inner layer comprises a polymer and a filler.

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117. Apparatus according to Claim 116 wherein the inner layer comprises more than about 30% by weight filler.

118. Apparatus according to Claim 116 or 117 wherein the inner layer comprises more than about 20 50% by weight filler.

119. Apparatus according to any of Claims 116 to 118 wherein the inner layer comprises about 60% by weight filler.

25 120. Apparatus according to any of Claims 116 to 119 wherein the inner layer comprises a greater amount of filler by weight than the outer layer.

121. Apparatus according to any of Claims 116 to 120 wherein the inner layer comprises a foaming agent, preferably wherein the foam layer is about 50% foamed.

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122. Apparatus according to any of Claims 71 to 121 wherein the filled plastics material further comprises a pigment.

123. Apparatus according to any of Claims 71 to 122 wherein the apparatus incorporates a remotely 35 readable ID tag, preferably an RFID tag.

124. Apparatus according to Claim 123 wherein the ID tag is moulded into the surface of the apparatus.

125. A method of manufacturing apparatus for storage or transportation of loads greater than about 50 kilograms, the method comprising rotationally moulding the apparatus from a filled plastics material comprising a polymer, a filler and a unifier.

126. A method of rotationally moulding a product from a filled plastics material comprising:
providing a mould for the product defining a void corresponding to at least a portion of the required shape of the product;
loading a first feedstock having a first composition comprising a polymer and at least 10% by weight of a mineral filler into the mould;
heating the mould;
rotating and/or rocking the mould about at least two axes to coat the internal walls of the mould with a layer of the first feedstock;
cooling the mould;
releasing the product from the mould.

127. A method according to Claim 126 further comprising providing heating means adjacent to the walls of the mould and heating the mould using the heating means.

128. A method according to Claim 126 or 127 further comprising providing cooling means adjacent to the walls of the mould and cooling the mould using the cooling means.

129. A method according to any of Claims 126 to 128 wherein the heating means comprises a plurality of burners.

130. A method according to any of Claims 126 to 129 wherein the cooling means comprises at least one supply of water.

131. A method according to any of Claims 126 to 130 wherein the mould is a generally elongate mould and wherein the method comprises rotating the mould about a first axis substantially parallel to the axis of elongation of the mould and rocking the mould about a second axis substantially orthogonal to the first axis.

132. A method according to any of Claims 126 to 131 wherein rocking the mould comprises rocking the mould to a maximum angle of less than about 30° from the horizontal.

133. A method according to any of Claims 126 to 132 wherein rocking the mould comprises rocking the mould at a rate of less than about 6 rocking cycles per minute.

5 134. A method according to any of Claims 126 to 133 wherein rotating the mould comprises rotating the mould at a rate of less than about 10 revolutions per minute.

10 135. A method according to any of Claims 126 to 134 wherein the mould comprises an inner mould portion and an outer mould portion, wherein the inner mould portion is positioned within the outer mould portion and wherein the first feedstock is inserted between the outer mould portion and the inner mould portion.

136. A method according to Claim 135 further comprising providing heating means within the inner mould portion.

15 137. A method according to any of Claims 126 to 136 further comprising maintaining the heating means at a substantially constant distance from the walls of the outer mould portion as the mould is rotated.

20 138. A method according to any of Claims 126 to 137 further comprising, before cooling the mould:
loading a second feedstock having a second composition into the mould;
rotating the mould to form a second layer of the second feedstock.

25 139. A method according to any of Claims 126 to 138 wherein the composition of the first layer is optimised to provide an outer skin layer.

140. A method according to Claim 138 or 139 wherein the composition of the second layer is optimised to provide an inner layer.

30 141. A method according to any of Claims 138 to 140 wherein the second feedstock comprises a foaming agent.

35 142. A method according to any of Claims 138 to 141 wherein the second feedstock comprises a higher proportion of filler than the first feedstock.

143. A method according to any of Claims 126 to 142 wherein the product comprises at least one of: a freight container, a pallet, a cable reel or a panel.

144. A method according to any of Claims 126 to 143 further comprising positioning elements of the product within the mould before the feedstock is inserted and over-moulding the elements into the product.

145. A method according to Claim 144 wherein the product comprises a freight container and wherein the elements comprise one or more of:

a metal frame;
door securing means;
strengthening elements; or
corner lifting elements.

146. A method according to any of Claims 126 to 145 wherein the product is moulded substantially in one piece.

147. A method according to any of Claims 126 to 146 wherein releasing the product from the outer mould portion comprises moving the walls of the outer mould portion apart and away from the moulded product.

148. A filled plastics material comprising:
a polymer;
at least 10% by weight of a mineral filler;
a unifier comprising stearate.

149. A filled plastics material according to Claim 148 wherein the unifier further comprises an internal lubricant, preferably steramide.

150. A filled plastics material according to Claim 149 wherein the steramide comprises Chrodamide S Powder.

151. A filled plastics material according to any of Claims 148 to 150 wherein the stearate comprises Calcium Stearate.

152. A filled plastics material according to any of Claims 148 to 151 wherein the unifier comprises more than 5% by weight steramide.

153. A filled plastics material according to any of Claims 148 to 152 wherein the unifier comprises about 10% by weight stearamide.

5 154. A filled plastics material according to any of Claims 148 to 153 wherein the unifier comprises more than 80% by weight stearate.

155. A filled plastics material according to any of Claims 148 to 154 wherein the unifier comprises about 90% by weight stearate.

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156. A filled plastics material according to any of Claims 148 to 155 wherein the polymer comprises polyethylene.

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157. A filled plastics material according to any of Claims 148 to 156 wherein the polymer comprises High Density Polyethylene (HDPE).

158. A filled plastics material according to any of Claims 148 to 157 wherein the filler comprises at least one of:

a silicate material, preferably sand;

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ash;

a carbonate material, preferably calcium carbonate;

a salt, preferably sodium chloride.

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159. A filled plastics material according to any of Claims 148 to 158 wherein the filled plastics material comprises at least 0.5% by weight unifier.

160. A filled plastics material according to any of Claims 148 to 159 wherein the filled plastics material comprises about 1% by weight unifier.

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161. Apparatus for rotationally moulding, from a filled plastics material, a load-carrying apparatus for carrying a load of at least 50 kilograms, the apparatus comprising:

a mould defining a void corresponding to at least a portion of the required shape of the product;

means for receiving a first feedstock comprising a filled plastics material comprising a polymer and at least 10% by weight of a mineral filler;

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heating means;

cooling means;

means for rotating and/or rocking the mould about at least two axes.

162. Apparatus according to Claim 161 wherein the heating means are provided adjacent to the walls of the mould.

5 163. Apparatus according to Claim 161 or 162 wherein the cooling means are provided adjacent to the walls of the mould.

164. Apparatus according to any of Claims 161 to 163 wherein the mould is a generally elongate mould and wherein the apparatus further comprises means for rotating the mould about a first axis
10 substantially parallel to the axis of elongation of the mould and means for rocking the mould about a second axis substantially orthogonal to the first axis.

165. Apparatus according to any of Claims 161 to 164 wherein the mould comprises an inner mould portion and an outer mould portion, wherein the inner mould portion is positioned within the
15 outer mould portion and wherein the first feedstock is inserted between the outer mould portion and the inner mould portion.

166. Apparatus according to any of Claims 161 to 165 further comprising heating means within the
20 mould.

167. Apparatus according to any of Claims 161 to 166 further comprising means for maintaining the heating means at a substantially constant distance from the mould.

168. Apparatus according to any of Claims 161 to 167 wherein the mould has a length of at least
25 5m.

169. Apparatus according to any of Claims 161 to 168 wherein the mould has a length of at least 10m.

30 170. Apparatus according to any of Claims 161 to 169 wherein the apparatus is mounted over a pit and wherein at least one end of the mould is rocked into the pit.

171. Apparatus according to any of Claims 161 to 170 wherein the means for receiving the feedstock comprises a series of apertures in the outer mould portion.

35 172. Apparatus according to Claim 171 wherein the series of apertures is formed along at least one edge of the outer mould portion.

173. Apparatus according to Claim 171 or 172 to wherein the series of apertures is covered by at least one sliding gate valve.

5 174. Apparatus according to any of Claims 171 to 173 wherein the internal surface of the sliding gate valve is coated in a non-stick material.

175. Apparatus according to any of Claims 161 to 174 further comprising at least one hopper for storing the feedstock.

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176. Apparatus according to Claim 175 wherein the hopper comprises dispensing means for dispensing a predetermined amount of the feedstock, wherein the predetermined amount comprises the amount of feedstock required to rotationally mould at least one load-carrying apparatus.

15 177. Apparatus according to any of Claims 161 to 176 further comprising filling means for loading the mould with a predetermined amount of the feedstock.

178. Apparatus according to Claim 177 wherein the filling means comprises means for filling the feedstock via a series of apertures in the outer mould portion.

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179. Apparatus according to Claim 178 wherein the means for filling the feedstock comprises at least one bucket having a series of apertures corresponding to the series of apertures in the outer mould portion.

25 180. Apparatus according to Claim 179 wherein the bucket comprises a telescopic bucket having an adjustable length.

181. Apparatus according to any of Claims 161 to 180 wherein the heating means comprises at least one burner.

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182. Apparatus according to any of Claims 161 to 181 wherein the cooling means comprises a supply of water.

35 183. A unifier for promoting binding and dispersion of a mineral filler and a polymer, wherein the unifier comprises a fatty acid amide.

184. A unifier according to Claim 183 wherein the fatty acid amide comprises a straight or branched C12-C24 fatty acid amide.

185. A unifier according to Claim 183 or 184 wherein the unifier comprises steramide.

186. A unifier according to any of Claims 183 to 185 further comprising an external lubricant, preferably wherein the external lubricant comprises a stearate.

187. A unifier according to Claim 186 comprising more than 80% by weight external lubricant.

188. A unifier according to Claim 186 or 187 comprising about 90% by weight external lubricant.

189. A rotationally-moulded load-carrying apparatus comprising:

at least 10% by weight HDPE;

at least 10% by weight of a filler comprising sand;

a unifier comprising a fatty acid amide;

wherein the load-carrying apparatus comprises an inner layer and an outer layer, the layers having different compositions.

190. Apparatus according to Claim 189, wherein the apparatus comprises a pallet having a length of at least about 800mm.

191. Apparatus according to Claim 189 to 190 wherein the inner layer comprises a foamed layer.

192. A pallet according to any of Claims 1 to 55 or 207 to 216 manufactured by the method of any of Claims 59 to 70 or Claims 126 to 147.

193. A plurality of pallets according to any of Claims 1 to 55 or 207 to 216 manufactured according to the method of any of Claims 59 to 70.

194. A pallet according to any of Claims 1 to 55 or 207 to 216 manufactured using the apparatus of any of claims 71 to 125.

195. A pallet according to any of Claims 1 to 55 or 207 to 216 manufactured by the method of any of Claims 126 to 147.

196. A pallet according to any of Claims 1 to 55 or 207 to 216 made of a material according to any of Claims 148 to 160.

197. A pallet according to any of Claims 1 to 55 or 207 to 216 manufactured using the apparatus of any of claims 161 to 182.

198. A pallet according to any of Claims 1 to 55 or 207 to 216 comprising a unifier according to any of Claims 183 to 188.

199. A pallet according to any of Claims 1 to 58 or 207 to 216 and any of Claims 189 to 191.

200. A pallet substantially as hereinbefore described and as shown in the accompanying drawings.

201. Apparatus substantially as any one described herein or as illustrated in any of Figs. 1 to 27.

202. A method substantially as any one described herein with reference to any of Figs. 1 to 27.

203. A filled plastics material substantially any one as described herein.

204. A pallet, a mould or an assembly station substantially as any one herein described.

205. A pallet substantially as hereinbefore described and as shown in Figures 9a, 9b, 10 or Figures 17 to 20 or 24.

206. A pallet or pallet element substantially as hereinbefore described and as shown in Figures 28 to 45 or Figures 46 to 58.

207. A rotationally moulded pallet manufactured substantially from a filled plastics material, wherein the pallet has:

a length of greater than around 1000mm and less than around 1500mm;

a mass of less than around 30kg;

a maximum load carrying capability of greater than around 1000kg.

208. A pallet according to Claim 207 wherein the mass of the pallet is less than around 25kg, preferably around 23kg.

209. A pallet according to Claim 207 or 208 wherein the maximum load carrying capability of the pallet is greater than around 1100kg, preferably around 1250kg.

210. A pallet according to any of Claims 207 to 209 wherein the top of the top deck, the top of the bottom deck and the interior of the at least one spacer are surface textured to around 15µm to 20µm.

211. A pallet according to any of Claims 207 to 210, wherein the pallet is marked with a code.

212. A pallet according to any of Claims 207 to 211 wherein the pallet comprises recyclable materials.

213. A pallet according to any of Claims 207 to 212 further comprising a means of identification.

214. A pallet according to Claim 213 in which the means of identification comprises a RFID tag.

215. A pallet according to Claim 214 in which the means of identification comprises a barcode.

216. A rotationally moulded pallet having a platform and a plurality of pallet feet depending therefrom, the pallet being manufactured substantially from a filled plastics material, wherein the pallet has:

a length of between about 1207 and 1211mm; and

a width of between about 1006 and 1010mm.

217. A moulding tool for rotationally moulding a product from a plastics-based material comprising a tool base having an internal shape corresponding to the external shape of the product and an internal surface comprising a silica-based material.

218. A moulding tool according to Claim 217 wherein the silica-based material comprises a fibrous rock-based material.

219. A moulding tool according to Claim 217 or 218 wherein the silica-based material comprises spun basalt.

220. A moulding tool according to Claim 217 or 218 wherein the silica-based material comprises spun diabase.

221. A moulding tool according to any of Claims 217 to 220 wherein the moulding tool is manufactured substantially from the silica-based material.

5 222. A moulding tool according to any of Claims 217 to 220 wherein the surface of the moulding tool is coated with the silica-based material.

223. A moulding tool according to any of Claims 217 to 222 wherein the moulding tool comprises a moulding tool for a pallet.

10 224. A moulding tool according to any of Claims 217 to 223 wherein the moulding tool further comprises a valve for inserting a composition into the mould.

15 225. A moulding tool according to Claim 224 wherein the valve comprises a first repellent surface, which covers an aperture in the mould when the valve is in a first position.

226. A moulding tool according to Claim 224 or 225 wherein the valve comprises a second non-stick surface, which covers an aperture in the mould when the valve is in a second position.

20 227. A plurality of moulding tools according to any of Claims 217 to 226 assembled into a mould to form a plurality of products.

228. A manufacturing plant for manufacturing rotationally moulded products from a plastics-based composition, the plant comprising:
a composition storage area;
25 a composition loading area, for loading the composition onto delivery means;
delivery means for delivering the composition to moulding areas within the manufacturing plant; and
moulding areas, each moulding area comprising a plurality of moulding apparatus.

30 229. A manufacturing plant according to Claim 228 further comprising a storage area for storing the rotationally moulded products.

230. A manufacturing plant according to Claim 228 or 229 wherein each mould comprises means for manufacturing a plurality of products.

35 231. A manufacturing plant according to any of Claims 228 to 230 wherein the moulding apparatus comprises apparatus according to any of Claims 161 to 182.